

**IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION**

POLARIS POWERLED TECHNOLOGIES,	§	
LLC,	§	
	§	
<i>Plaintiff,</i>	§	
	§	
v.	§	Case No. 2:22-CV-00469-JRG
	§	
SAMSUNG ELECTRONICS AMERICA,	§	
INC., SAMSUNG ELECTRONICS CO., LTD.,	§	
and SAMSUNG DISPLAY CO., LTD.,	§	
	§	
<i>Defendants.</i>	§	

MEMORANDUM CLAIM CONSTRUCTION OPINION AND ORDER

In this patent case, Polaris PowerLED Technologies, LLC (“Polaris”) alleges infringement by Samsung Electronics America, Inc., and various affiliates (together, “Samsung”) of U.S. Patent No. 7,259,521 (the “’521 Patent”), U.S. Patent No. 8,217,887 (the “’887 Patent”), and U.S. Patent No. 8,740,456 (the “’456 Patent”). The ’521 Patent and the ’887 Patent relate to electronic displays. *See* ’521 Patent at 1:6–9 (“The invention relates . . . to a video driver for AMOLED displays that is capable of isolating the pixel circuit from power supply voltage variations.”); ’887 Patent at 1:6–8 (“The present invention relates . . . to controlling the intensity of light emitting diodes (LEDs) in the backlights of electronic displays.”). The ’456 Patent relates “to a method for adjusting delivery of current in a connection based on temperature.” ’456 Patent at 1:6–9.

The parties dispute the scope of 12 terms or phrases from the patents’ claims. Having considered the parties’ briefing and arguments of counsel during an April 11, 2024 hearing, the

Court resolves the disputes as follows.

I. BACKGROUND

A. U.S. Patent 7,259,521

The '521 Patent addresses the problem of power supply voltage variations in active matrix organic light emitting diode (AMOLED) displays. According to the patent, AMOLED display panels “contain[] many thousands of individual pixel drivers which provide current to energize the individual pixel OLEDs.” '521 Patent at 1:15–17. The patent explains that “[t]he direct relationship between the drive current and the power supply voltage renders AMOLED displays extremely sensitive to power supply voltage noise.” *Id.* at 1:32–35. In the prior art, for example, variations in the power supply voltage result in variations in the current driving the pixel elements, which negatively impacts the quality of the display. *See id.* at 2:67–3:4.

To address this problem, the '521 Patent teaches a video driver interposed between a video source and an AMOLED display panel that causes the drive current to be “independent of the positive power supply voltage.” '521 Patent at [57]. In each of the three disclosed embodiments, the positive power supply voltage VDD is connected to both the display panel and the video driver and used as a reference signal. Thus, variations in VDD result in corresponding changes to the video drive signal $v(t)$, which is the signal provided to the display by the driver. *Id.* figs.2–4 (items 124, 224, 324). As a result, the voltage difference between VDD and $v(t)$ remains constant despite any variations in the value of VDD, which means the drive current I_D —the current driving the pixel elements—also remains constant.

The '521 Patent has one independent claim, from which many of the parties' disputes arise:

1. An active matrix organic light emitting diode (AMOLED)

display system comprising an AMOLED display panel receiving a video signal to be displayed on the AMOLED display panel, the AMOLED display panel comprising a plurality of organic light emitting diode (OLED) pixel elements, the AMOLED display system comprising:

- a video driver receiving the video signal and generating a video drive signal indicative of the video signal and referenced to a positive power supply voltage of the AMOLED display panel; and
- a current driver coupled to at least one OLED pixel element, the current driver receiving the video drive signal and the positive power supply voltage and providing a drive current to the at least one OLED pixel element, the drive current being proportional to a current drive voltage being indicative of the video signal and independent of the positive power supply voltage.

'521 Patent at 8:47–64.

B. U.S. Patent 8,217,887

The '887 Patent concerns controlling the LED display backlighting, which is the light source used to illuminate the display. '887 Patent at 1:6–13. After explaining the industry's "enthusiastic pursuit" of using LEDs relative to then-existing technology, *id.* at 1:23–30, the '887 Patent explains that prior-art methods of controlling LED backlighting use pulse-width modulation (PWM), *id.* at 1:47–48. PWM uses the duty cycle—that is, the amount of time during any period during which a signal is active—to control the amount of power sent to the LEDs. By alternating between a high and low voltage state (i.e., between "on" and "off") fast enough, the perceived intensity of light to the observer can be controlled. *Id.* at 1:52–56.

The '887 Patent teaches adjusting the intensity of a backlight multiple times during a frame. This provides "flexibility in setting the luminosity of the display and also provides the ability to ma[k]e a gradual transition between the luminosities of two successive frames." '887

Patent at 2:35–53.

Both disputes relating to this patent concern Claim 1, which recites:

1. A control circuit for an electronic display comprising:
 - a first circuitry for controlling luminosity levels of a plurality of strings of light emitting diodes (LEDs);
 - a second circuitry for controlling a plurality of pixels for displaying a plurality of image frames of a video;
 - the second circuitry for displaying each image frame of the plurality of image frames for a predetermined period of time, the second circuitry configured to change a displayed image frame once every cycle of a first clock signal having a first frequency; and
 - the first circuitry for adjusting the luminosity levels of the plurality of strings of LEDs for a plurality of times within the predetermined period of time, the first circuitry configured to adjust the luminosity levels according to a second clock signal having a second frequency that is a multiple of the first frequency and is higher than the first frequency.

Id. at 6:39–55. Specifically, the parties dispute whether Polaris’s statements in a related IPR proceeding limit the manner of “adjusting the luminosity levels.” They also dispute the scope of a “string of light emitting diodes (LEDs).”

C. U.S. Patent 8,740,456

The ’456 Patent concerns adjusting the delivery of current to a device based on temperature. ’456 Patent at [57]. Given that an increase in current to a device, such as during charging, causes a temperature increase that can lead to inoperability or even catastrophic failure, *id.* at 1:17–30, the ’456 Patent teaches a method of reducing the current provided to the device when certain temperature changes are detected, *id.* at [57]. Claim 1, which is the only independent claim, recites:

1. A method for adjusting current based on temperature, comprising:
 - determining a change temperature at a first device wherein said temperature is measured at a first port of the first device that is configured to receive a connection to a second device;
 - determining a change temperature at a second device wherein said temperature is measured at a second port of the second device that is configured to receive the connection to the first device;
 - determining the greater of the changes in temperature measured at the first device and the second device, wherein said determining is performed while the first device provides current to the second device over the connection;
 - determining if the greater of the changes in temperature is above a threshold;
 - if the greater of the changes in temperature is above the threshold, reducing the current being provided from the first device to the second device.

'456 Patent at 10:21–40.

II. LEGAL STANDARDS

A. Generally

“[T]he claims of a patent define the invention to which the patentee is entitled the right to exclude.” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc). As such, if the parties dispute the scope of the claims, the court must determine their meaning. *See, e.g., Verizon Servs. Corp. v. Vonage Holdings Corp.*, 503 F.3d 1295, 1317 (Fed. Cir. 2007) (Gajarsa, J., concurring in part); *see also Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 390 (1996), *aff’g*, 52 F.3d 967, 976 (Fed. Cir. 1995) (en banc).

Claim construction, however, “is not an obligatory exercise in redundancy.” *U.S. Surgical*

Corp. v. Ethicon, Inc., 103 F.3d 1554, 1568 (Fed. Cir. 1997). Rather, “[c]laim construction is a matter of [resolving] disputed meanings and technical scope, to clarify and when necessary to explain what the patentee covered by the claims” *Id.* A court need not “repeat or restate every claim term in order to comply with the ruling that claim construction is for the court.” *Id.*

When construing claims, “[t]here is a heavy presumption that claim terms are to be given their ordinary and customary meaning.” *Aventis Pharm. Inc. v. Amino Chems. Ltd.*, 715 F.3d 1363, 1373 (Fed. Cir. 2013) (citing *Phillips*, 415 F.3d at 1312–13). Courts must therefore “look to the words of the claims themselves . . . to define the scope of the patented invention.” *Id.* (citations omitted). The “ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application.” *Phillips*, 415 F.3d at 1313. This “person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification.” *Id.*

Intrinsic evidence is the primary resource for claim construction. *See Power-One, Inc. v. Artesyn Techs., Inc.*, 599 F.3d 1343, 1348 (Fed. Cir. 2010) (citing *Phillips*, 415 F.3d at 1312). For certain claim terms, “the ordinary meaning of claim language as understood by a person of skill in the art may be readily apparent even to lay judges, and claim construction in such cases involves little more than the application of the widely accepted meaning of commonly understood words.” *Phillips*, 415 F.3d at 1314; *see also Medrad, Inc. v. MRI Devices Corp.*, 401 F.3d 1313, 1319 (Fed. Cir. 2005) (“We cannot look at the ordinary meaning of the term . . . in a vacuum. Rather, we must look at the ordinary meaning in the context of the written description and the prosecution history.”). But for claim terms with less-apparent meanings, courts consider

“those sources available to the public that show what a person of skill in the art would have understood disputed claim language to mean . . . [including] the words of the claims themselves, the remainder of the specification, the prosecution history, and extrinsic evidence concerning relevant scientific principles, the meaning of technical terms, and the state of the art.” *Phillips*, 415 F.3d at 1314.

B. Indefiniteness

“[A] patent is invalid for indefiniteness if its claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 901 (2014). The claims “must be precise enough to afford clear notice of what is claimed” while recognizing that “some modicum of uncertainty” is inherent due to the limitations of language. *Id.* at 908. “Indefiniteness must be proven by clear and convincing evidence.” *Sonix Tech. Co. v. Publ’ns Int’l, Ltd.*, 844 F.3d 1370, 1377 (Fed. Cir. 2017).

III. THE LEVEL OF ORDINARY SKILL IN THE ART

The level of ordinary skill in the art is the skill level of a hypothetical person who is presumed to have known the relevant art at the time of the invention. *In re GPAC*, 57 F.3d 1573, 1579 (Fed. Cir. 1995). In resolving the appropriate level of ordinary skill, courts consider the types of and solutions to problems encountered in the art, the speed of innovation, the sophistication of the technology, and the education of workers active in the field. *Id.* Importantly, “[a] person of ordinary skill in the art is also a person of ordinary creativity, not an automaton.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 421 (2007).

Here, the parties present their proposed levels of skill in the art through their experts’ declarations. According to Polaris’s experts, for the ’521 Patent, a skilled artisan at the time of

invention “would have had at least a bachelor’s degree in electrical or computer engineering, or an equivalent area with 2–3 years of experience in the field of driving circuitry for active matrix displays.” (Credelle Decl., Dkt. No. 86-15 ¶ 23). For the ’456 Patent, a skilled artisan “would have a bachelor’s degree in electrical engineering or a similar field, and at least two years of experience, or its equivalent, in communication and mixed signal circuits, including power electronics.” (Ricketts Decl., Dkt. No. 86-16 ¶ 23). Samsung’s expert proffers similar levels of skill. *See* (Baker Decl., Dkt. No. 97-1 ¶¶ 53–55). Neither party contends that resolving any differences in proposed levels of skill is outcome determinative for the disputed terms.

IV. THE DISPUTED TERMS

- A. **“a video driver receiving the video signal and generating a video drive signal indicative of the video signal and referenced to a positive power supply voltage of the AMOLED display panel” (’521 Patent, Claim 1)**

Polaris’s Construction	Samsung’s Construction
Plain and ordinary meaning	“a video driver receiving the video signal and receiving a positive power supply voltage of the AMOLED display panel as an input and generating a video drive signal indicative of the video signal based on the positive power supply voltage”

This dispute centers on what it means to “reference” a signal to a voltage. Samsung’s position is based mainly on statements by Polaris in a related IPR proceeding, in which Polaris summarized the invention as having a video driver that “receives the power supply voltage VDD as an input rather than a separate voltage source.” (Dkt. No. 97 at 4 (quoting Patent Owner’s Resp., Dkt. No. 99 at 4)). In the same document, Polaris described the ’521 Patent as calculating the video drive signal “as an offset of the positive power supply voltage,” or PPSV. (*Id.* (quoting Patent Owner’s Resp., Dkt. No. 99 at 63)). These statements, says Samsung, are consistent with every embodiment in the written description, *id.* at 4–5, and require the PPSV to be directly

connected to the driver, (Hr’g Tr., Dkt. No. 131 at 10:7–13).

Polaris replies that its IPR statements referenced specific embodiments and were not definitional. (Dkt. No. 105 at 1). It says Samsung’s position is wrong for two reasons: (1) the language Samsung quotes is different from the disputed phrase, and (2) Samsung is “simply incorrect,” because a video driver could use a signal that provides information *about the signal* rather than the signal itself. (*Id.* at 1–2 (citing Credelle Decl., Dkt. No. 86-15 ¶ 40)); *see also* (Hr’g Tr., Dkt. No. 131 at 5:21–6:24 (suggesting, *inter alia*, “there [might] be some kind of input that receives a voltage with information about some kind of value about the positive power supply voltage, but it might be counted as an offset from some other voltage”))).

The difference in the parties’ positions stems from their respective interpretations of the ordinary and customary meaning of “referenced to.” Polaris seems to adopt a lay interpretation of the phrase—something like “related to”—so that simply providing information about a signal would be sufficient to meet this claim limitation. Samsung, on the other hand, suggests a more technical meaning. *See* (Dkt. No. 97 at 5 (asserting Polaris’s IPR statements require the video driver to shift the DC bias of the video signal)).

The specification is replete with usages of “referenced to” when describing the relationship of one signal to another. For example, the specification describes the prior art as having a video drive signal $v(t)$ that is “referenced to the ground voltage.” ’521 Patent at 2:2–3; *see also id.* at 2:11–14 (noting “the analog signal Video.DAC is referenced to ground”); *id.* at 2:34–37 (“Voltage Video.OLED is referenced to the power supply voltage VDD and is given as $\text{Video.OLED} = \text{VDD} - v(t)$.”). Similarly, the ’521 Patent describes the drive signal $v(t)$ of Figure 3 as “made referenced to the power supply voltage VDD so that the current drive voltage signal Video.OLED is made independent of the power supply voltage VDD.” *Id.* at 6:2–6.

Ultimately, the question is whether a skilled artisan would understand Claim 1 as inherently requiring a connection of the display panel's PPSV to the video driver, and the Court answers in the affirmative. As the patent describes for multiple examples:

$$\text{Video.OLED} = \text{VDD} - v(t).$$

'521 Patent at 2:34–37 (Equation 2); *see also id.* at 5:10–15 (Equation 6), 6:10–15 (Equation 7), 7:38–43 (Equation 9). In other words, the signal provided by the driver to the panel is based on VDD. A skilled artisan would not understand how the drive signal could be “referenced to” the display panel's PPSV unless that voltage were made available to the video driver, such as through some electrical connection. Thus, that a drive signal $v(t)$ is “referenced to” the PPSV inherently requires that the video driver be connected to the PPSV; otherwise, the current drive voltage Video.OLED cannot be provided to the display panel.

As Samsung notes, this conclusion is consistent with both the specification and the prosecution history. Each of Figures 2–4 show the PPSV of the display panel connected to the video driver. '521 Patent figs.2–4 (items 124, 224, and 324). Moreover, the patentee explained the invention “receives the power supply voltage VDD as an input rather than a separate voltage source.” (Patent Owner's Resp., Dkt. No. 99 at 4). That same document describes the drive signal $v(t)$ “as an offset of the positive power supply voltage.” (*Id.* at 63).

Polaris's position, on the other hand, improperly broadens the meaning of the term. Dr. Credelle's declaration, for example, simply concludes that Samsung's construction “is contrary to the plain and ordinary meaning of the claim term,” but provides no insight on what that meaning is or the basis for his conclusion from the perspective of a skill artisan. *See* (Credelle Decl., Dkt. No. 86-15 ¶ 40). Similarly, Dr. Credelle concludes “the video driver could use a signal that provides information about the value of the [PPSV] to reference the video drive signal

to the [PPSV],” without any explanation about why a skilled artisan would interpret “referenced to” that way. (*Id.*) That, however, could include transmitting the *value* of the PPSV to the video driver rather than providing the voltage itself, which is not how a skilled artisan would understand this phrase. Regardless, the phrase “referenced to” does not refer to information about the value of the PPSV but specifies the second of two points used to define Video.OLED. Samsung’s position better captures that concept.

Polaris correctly notes this is not lexicography or disavowal, so the patentee is entitled to the full scope of the claim. That, however, does not resolve how a skilled artisan would understand the meaning of this phrase. Given that Samsung’s more technical approach better addresses the issue, the Court adopts the spirit of Samsung’s construction and construes this phrase as “a video driver receiving the video signal and connected to a positive power supply voltage of the AMOLED display panel and generating a video drive signal indicative of the video signal based on the positive power supply voltage.”

B. “AMOLED display panel” (’521 Patent, Claim 1)

Polaris’s Construction	Samsung’s Construction
Plain and ordinary meaning, i.e., “Active Matrix Organic Light Emitting Diode display panel”	“display containing many thousands of individual OLED pixel elements having corresponding pixel circuits that are programmed with a stored voltage via a series of row and column decoders and switches”

According to Samsung, this term has two disputes. First, must an AMOLED display panel have “many thousands of individual OLED pixel elements?” Second, what is meant by “active matrix,” which is the “AM” in AMOLED?

1. *Whether AMOLED display panels have “many thousands of OLED pixel elements”*

Samsung points to Polaris’s preliminary response in the related IPR proceeding, in which Polaris stated, “AMOLED displays contain many thousands of individual OLED pixel elements.” (Dkt. No. 97 at 6 (quoting Prelim. Resp., Dkt. No. 99 at 2)). According to Samsung, this was a description of the invention rather than of just an embodiment. (*Id.*). Notably, the ’521 Patent’s description of related art contains a similar statement. *See* ’521 Patent at 1:14–17 (“An AMOLED display panel contains many thousands of individual pixel drivers which provide current to energize the individual pixel OLEDs.”).

Polaris disputes any lexicography or disclaimer and characterizes its statements as merely a discussion of conventional AMOLED display panels as background. (Dkt. No. 86 at 7); *see also* (Hr’g Tr., Dkt. No. 131 at 19 (noting “the many thousands, that is simply a statement in the description of related art, and it’s not discussing the invention; it’s really just getting some background on conventional AMOLED display panels”)). Polaris stresses the ’521 Patent’s Summary, which states that, according to one embodiment, “the AMOLED display panel includes a plurality of organic light emitting diode (OLED) pixel elements.” (Dkt. No. 86 at 7). According to Polaris, “the number of pixels is irrelevant as to whether a display panel is an ‘AMOLED display panel’ as recited in the claims,” and it can have any number of pixels. (*Id.* at 7–8).

The ’521 Patent clearly characterizes “AMOLED display panels” as having many thousands of pixels. Contrary to Polaris’s assertion, neither the Summary nor the preamble of Claim 1 is inconsistent with that description, because “many thousands of pixel elements” is also “a plurality of pixel elements” as recited in Claim 1. In fact, Polaris admits its characterization

relates to “conventional” AMOLED display panels, but it fails to explain why that understanding of “conventional” panels should not carry over to the *claimed* display panel. The ’521 Patent’s technical solution, after all, does not concern the number of pixels in the display, but rather isolating the pixel elements from the effect of power-supply variations.

That said, Samsung’s construction is problematic given its lack of precision. When construing claim terms, courts recognize lexicography if “the patentee clearly, deliberately, and precisely define[s] the [disputed] phrase.” *Merck & Co. v. Teva Pharm. USA, Inc.*, 395 F.3d 1364, 1379 (Fed. Cir. 2005); *see also Renishaw PLC v. Marposs Societa’ per Azioni*, 158 F.3d 1243, 1249 (Fed. Cir. 1998) (“The patentee’s lexicography must, of course, appear ‘with reasonable clarity, deliberateness, and precision’ before it can affect the claim.”) (quoting *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994)). Here, even if the statements in the specification and preliminary IPR response are *deliberate* lexicography or disavowal, they are not *precise*.

The Court agrees the plain and ordinary meaning of “display panel” controls. That ordinary meaning does not require a specific number of pixels but must have the ability to provide information to a viewer of the panel. Accordingly, the Court construes “display panel” as “an electronic screen on which information can be displayed.”

2. *The meaning of “active matrix”*

Samsung seeks a construction that expressly includes the mechanism underlying an active-matrix display. Polaris does not dispute that Samsung’s characterization of the technology is correct—only that it is unnecessary. (Dkt. No. 105 at 3); *see also* (Hr’g Tr., Dkt. No. 131 at 22:22–23:2 (“[O]ur position isn’t that [Samsung’s construction for “active matrix”] is wrong, . . . we just don’t think that’s necessary [W]e don’t think this is helpful to include in the construction.”)). The only evidence in the record supports Samsung’s position. *See* (Dkt. No.

97 at 6–7).

Given there is no apparent dispute that Samsung’s explanation is correct, the Court elects to include that language in its construction. Faced with the choice of whether the jury receives the explanation from the Court or from experts, the former is more efficient and has less potential for confusion and mischief.¹

* * *

Taking the separate conclusions noted *supra*, the Court construes “AMOLED display panel” as “an electronic screen on which information can be displayed, the pixel elements of the screen having corresponding pixel circuits that are programmed with a stored voltage via a series of row and column decoders and switches.”

C. “video signal” (’521 Patent, Claims 1, 2, 3, 5, 7)

Polaris’s Construction	Samsung’s Construction
Plain and ordinary meaning, i.e., “signal representing video data”	“analog signal representing converted video data”

The parties dispute whether the scope of this term should be limited to analog video signals. According to Samsung, the specification supports such a limitation by referring to the claimed video signal as “an analog signal representing converted video data.” (Dkt. No. 97 at 7–8 (citing ’521 Patent at 4:16–19, 5:40–46, 6:50–53)). Moreover, says Samsung, the language of the claims requires certain circuit configurations that only make sense in the context of analog

¹ Polaris argues “it would be more confusing to have a specific definition of [active matrix] in the claim construction rather than just to let the experts explain the concept,” (Hr’g Tr., Dkt. No. 131 at 22:1–3), but the Court fails to see how. Regardless, the experts are still free to “explain the concept,” but if Samsung’s construction is adopted by the Court, the experts should need less time do so.

signals. (*Id.* at 8–9). Samsung also contends that Polaris disavowed any embodiment in which the claimed video signal is a *digital* signal by statements it made in the related IPR proceeding. (*Id.* at 8).

Starting with the term’s plain and ordinary meaning, the Court agrees with Polaris. Samsung presents no evidence that meaning is limited to *analog* signals. In fact, the ’521 Patent undercuts that notion. *See* ’521 Patent at 1:61–62 (noting that “[i]n most systems, video signals are digital in nature”). And if the claims recite circuits that only work if used with analog video signals, Samsung’s non-infringement position should be strong, but that does not alter the ordinary meaning of the term.

Regarding Samsung’s disavowal argument, it points to two statements from Polaris’s Preliminary Response: (1) “[o]ne of ordinary skill in the art would have understood that generating a video drive signal requires taking a usually digital video signal and shifting, converting to analog, . . .”; and (2) “the ’521 patent describes generating a video drive signal as, among other things, receiving a video signal . . . and shifting it ‘to bring the DC range of *the analog video signal* to within range of the AMOLED display panel.’” (Dkt. No. 97 at 8 (quoting Prelim. Resp., Dkt. No. 99 at 13–15)). Notably, however, these statements were made with reference to the phrase “generating a video *drive* signal,” not “video signal,” *see* (Prelim. Resp., Dkt. No. 99 at 13), and are not clear and unmistakable disavowal. Much like Samsung’s argument about circuit configurations, it may be impossible to infringe a claim that includes this language unless the accused “video signal” is an *analog* signal, but that is not a basis for altering the ordinary and customary meaning of the term. The Court therefore adopts Polaris’s construction of “signal representing video data.”

D. “independent of the positive power supply voltage” (’521 Patent, Claim 1)

Polaris’s Construction	Samsung’s Construction
Plain and ordinary meaning	Indefinite

According to Samsung, the scope of this limitation is unclear because a skilled artisan would not understand what the current drive voltage is “independent of”—the voltage received by the video driver (which Samsung calls VDD_{VID}) or the voltage received by the current driver (which Samsung calls VDD_{CUR}). Samsung recognizes these are the same in the disclosed embodiments, (Dkt. No. 97 at 12 n.2), but it argues this creates confusion when reading the claims on an accused embodiment of an AMOLED display panel. In short, Samsung questions what a skilled artisan would understand as “the positive power supply voltage.”

In reply, Polaris calls this an entirely new argument that is unsupported by Samsung’s expert’s declaration. (Dkt. No. 105 at 6). It stresses “ VDD_{VID} ” and “ VDD_{CUR} ” do not appear in the patent. (*Id.* at 6–7). Instead, the specification only discloses one positive power supply voltage VDD . (*Id.*).

Samsung has not shown the phrase is indefinite. According to the claim language, the current drive voltage must be independent of *a* positive power supply voltage to which the video driver is referenced. Whether that supply voltage is the video-driver voltage (Samsung’s VDD_{VID}) or the current-driver voltage (Samsung’s VDD_{CUR}) may be an issue of breadth, but Samsung has not shown that the recited PPSV could not be *either* VDD_{VID} or VDD_{CUR} . Instead, Samsung’s argument is one the Court would expect based on allegedly vague infringement contentions—for example, the failure of Polaris to specify whether it alleges VDD_{VID} or VDD_{CUR} of an embodiment meets the PPSV requirement of the claim—but that does not mean the claim is indefinite.

More fundamentally, Samsung has not shown a skilled artisan would have difficulty understanding the scope of the term. As it acknowledged during the hearing, the technical basis for its argument depends on Polaris’s expert’s declaration. *See* (Dkt. No. 131 at 32:13–16 (“The indefiniteness argument arises from an issue identified by Polaris’ own expert. And their expert . . . points out that there’s two different VDDs”)). But Samsung’s expert does not then take that technical information and explain why a skilled artisan would be uncertain about the meaning of the claim term. In the end, Samsung has not carried its burden, and the Court will give this term a “plain and ordinary meaning” construction.

E. “[the sum of or] the difference between the positive power supply voltage and the video [drive] signal” (’521 Patent, Claim 2)

Polaris’s Construction	Samsung’s Construction
Plain and ordinary meaning	“[an addition of or] a subtraction between the positive power supply voltage and the video [drive] signal, which are of the same type”

Claim 2 of the ’521 Patent recites “[1] the video drive signal is indicative of the sum of or the difference between the positive power supply voltage and the video signal and [2] the current drive voltage is indicative of the difference between the positive power supply voltage and the video drive signal.” ’521 Patent at 8:65–9:3. Samsung asserts its construction “clarifies that the claimed video signal must be different from the claimed video drive signal.” (Dkt. No. 97 at 16). With the phrase “which are of the same type,” Samsung reflects the notion that the addition of analog to digital signals does not make sense. (*Id.*).

Polaris replies that any clarification that the video signal and video drive signal are different is unnecessary because the claims themselves sufficiently describe the two signals. (Dkt. No. 105 at 7). Moreover, Polaris emphasizes the claim does not require that signals are

actually added or subtracted—only that they be *indicative* of the sum or difference of the signals. (*Id.*).

The Court generally agrees with Polaris. For one, there is little, if any, value in a construction that changes “the sum of” to “an addition of.” Moreover, the claims and specification clearly differentiate between the video signal and video drive signal. Finally, the actual mathematical operation—that is, the existence of a circuit or logic that performs the addition or subtraction—is not required by the claims. “Indicative of” simply means to indicate what the value of the sum or difference is. It does not by itself require the operation to be performed. That said, the addition or subtraction would likely be necessary to show infringement.

Regarding the phrase “which are of the same type,” if, as Samsung suggests, digital and analog signals cannot be added or subtracted from one another, it will be difficult for Polaris to prove the claims literally read on an accused device that uses different signal types. That would require Polaris to show the video drive signal is indicative of something that cannot exist. But that is an infringement issue rather than an issue for claim construction. Accordingly, the Court will give this term a “plain and ordinary meaning” construction.

F. “current mode isolator circuit” (’521 Patent, Claim 5)

Polaris’s Construction	Samsung’s Construction
Plain and ordinary meaning	Indefinite. Alternatively: “circuitry 202 as shown in Fig. 3 or circuitry 602 as shown in Fig. 6”

Claim 5 of the ’521 Patent requires the “video driver” of Claim 1 to have “a *current mode isolator circuit* for providing the video drive signal being the difference between the positive power supply voltage and the video signal.” ’521 Patent at 9:27–31 (emphasis added). Samsung

claims this is a coined term, and therefore the intrinsic evidence controls. (Dkt. No. 97 at 17). Samsung further contends that the specification does not set forth the metes and bounds of what constitutes a “current mode isolator circuit.” (*Id.*). Polaris, on the other hand, characterizes a “current mode isolator circuit” as a well-known type of circuit and suggests the specification clearly describes its structure and operation. Thus, a skilled artisan would have no trouble understanding the term’s scope. (Dkt. No. 86 at 15).

To start, the Court agrees with Samsung that the term has no ordinary and customary meaning and is thus “coined.” *See IQASR LLC v. Wendt Corp.*, 825 F. App’x 900, 904 (Fed. Cir. 2020) (explaining “[w]hen a term ‘has no ordinary and customary meaning,’ it is a ‘coined’ term”). Polaris presented no persuasive evidence to the contrary. Despite it supposedly being a well-known circuit type, neither Polaris nor its expert inform the Court as to what such a circuit comprises.

The question, then, is “whether the intrinsic evidence provides objective boundaries to the scope of the term.” *Iridescent Networks, Inc. v. AT&T Mobility, LLC*, 933 F.3d 1345, 1353 (Fed. Cir. 2019). “The failure to define [a] term is . . . not fatal, for if the meaning of the term is fairly inferable from the patent, an express definition is not necessary.” *Bancorp Servs., L.L.C. v. Hartford Life Ins. Co.*, 359 F.3d 1367, 1373 (Fed. Cir. 2004).

Here, the term’s meaning is “fairly inferable from the patent.” From the intrinsic record, a skilled artisan would understand “isolator” refers to “isolation of the pixel circuit from power supply voltage variations.” *See* ’521 Patent at 1:8–9. “Current mode” suggests using current flow to perform that isolation. Further, the specification explains that the embodiment of Figure 3 converts current to the voltage signal $v(t)$, which is referenced to the positive power supply voltage VDD through a resistive load. ’521 Patent at 5:65–6:1. Based on the intrinsic record, the

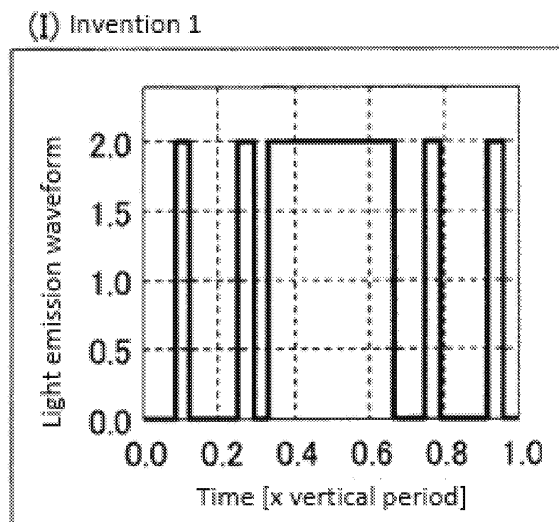
Court construes “current mode isolator circuit” as “a circuit that converts current to the voltage signal $v(t)$, which is referenced to the power supply voltage VDD through a resistive load.”

G. The “Luminosity” Terms: “adjusting the luminosity levels of the plurality of strings of LEDs for a plurality of times within the predetermined period of time” (’887 Patent, Claim 1)

Polaris’s Construction	Samsung’s Construction
“adjusting the brightness of the plurality of strings of LEDs for a plurality of times within the predetermined period of time”	“changing drive voltage and drive current levels applied during on states of the plurality of strings of LEDs for a plurality of times within the predetermined period of time”

This dispute focuses on “adjusting the luminosity levels.” Relying at least partly on disclaimer, Samsung argues the intrinsic record mandates that the luminosity of the recited LEDs must be adjusted a certain way—by changing the voltage applied to the LEDs. (Dkt. No. 97 at 21). For support, Samsung points to Polaris’s IPR statements made in response to Samsung’s challenge that a cited reference (Seo) taught “adjusting the luminosity levels” with a pulse-width modulation (PWM) scheme.

Specifically, Samsung alleged “Seo discloses adjusting luminosity levels of at least one of the plurality of strings of LEDs by the lamp turn ON signal ‘p0,’ based on clock signals (pseudo hold pulse signal ‘h’ and PWM dimming signal ‘d’) a plurality of times during display of one image frame.” (Pet. for IPR, Dkt. No. 101-3 at 33–34). Samsung also alleged Part (I) of Seo’s Figure 6 (below) “shows that these signals cause the luminosity of the LEDs to be adjusted several times within a single ‘vs’ time period[.]” (*Id.* at 35).



Part (I) of Fig. 6 of Seo

To that, Polaris responded that “[m]erely pulsing a backlight on and off does not implicitly or inherently result in an adjustment to luminosity,” and “Seo does not teach that luminance levels are adjusted.” (Dkt. No. 97 at 23–24 (quoting Prelim. Resp., Dkt. No. 100-1 at 28)). According to Polaris, “Seo considered maintenance of a uniform brightness to be a ‘safety issue’ of paramount importance. The ’887 patent, unlike Seo, expressly aims to adjust the luminosity levels of the backlight multiple times during a frame to achieve a smooth transition between frames of different luminosities.” (Prelim. Resp., Dkt. No. 100-1 at 28). In other words, Polaris argued it is not *how* the luminosity is adjusted that matters, but *how often*.

The Court disagrees that these statements disclaim PWM method for adjusting luminosity levels. In its petition, Samsung argued switching the LEDs on and off met the “adjusting the luminosity levels” limitation. In other words, changing the voltage from zero to some positive voltage (e.g., 5 volts) to turn on the LEDs adjusted the instantaneous luminosity from nothing to something, as did changing the voltage back to nothing. In response, Polaris’s IPR expert explained, “Seo’s pulsing of a backlight in a fixed pattern *over the time period of a frame* results

in constant display brightness over the period of the frame.” (Decision Denying Institution, Dkt. No. 102 at 26 (quoting Dr. Credelle’s IPR declaration; emphasis added)). In other words, whereas Samsung’s challenge focused on adjusting the luminosity at any time, the ’887 Patent concerns the adjustment of luminosity *over time*. See also (*id.* at 27–28 (quoting Dr. Credelle’s testimony that, “[b]ecause each light source has a constant, repeating PWM waveform over each frame, a [person of ordinary skill in the art] would not consider Seo to teach or suggest that the luminosity levels of the light sources of Seo are adjusted let alone multiple times within the time period of a frame” (brackets in original))).

Ultimately, the Court sees no clear-and-unmistakable disclaimer of the use of PWM to adjust luminosity levels as recited in Claim 1. Polaris’s arguments were clearly directed to changes in *total* luminosity over time rather than adjustments to *instantaneous* luminosity by energizing and de-energizing the LEDs. Accordingly, the Court rejects the disclaimer urged by Samsung and will give this term a “plain and ordinary meaning” construction.

H. “a plurality of strings of light emitting diodes (LEDs)” (’887 Patent, Claims 1, 13)

Polaris’s Construction	Samsung’s Construction
Plain and ordinary meaning	“a plurality of sets of LEDs connected in series where each set can be selectively turned on and off”

The parties dispute the meaning of “string of light emitting diodes.” Samsung presents extrinsic evidence for its construction and points to statements made by Polaris during a related IPR proceeding. (Dkt. No. 97 at 19). Polaris, however, asserts the term “should be given its plain and ordinary meaning” but fails to state what that meaning is. (Dkt. No. 86 at 20). It contends that, because neither the specification nor the claims describe whether LED strings are wired in series, in parallel, or by some other arrangement, “there is no legal basis for rewriting the actual

language of the claims.” (*Id.*). Elsewhere Polaris analogizes to Christmas lights, which it says need not be in series, and suggests a “string” simply means there are two or more LEDs connected together. (Dkt. No. 105 at 11–12).

The Court agrees with Samsung. Polaris incorrectly suggests the plain and ordinary meaning of a term is confined to the contents of the disclosure, and it ignores what would be known to one of ordinary skill in the art outside of the specification. *See Hill-Rom Servs. v. Stryker Corp.*, 755 F.3d 1367, 1373 (Fed. Cir. 2014) (“[A] patent specification need not disclose or teach what is known in the art.”). Based on the extrinsic evidence, Samsung has shown the plain and ordinary meaning of “string of LEDs” are a set of LEDs connected in series. *See* (Power Driver Topologies & Control Schemes for LEDs, Dkt. No. 100-2 at 1319 (“LEDs are connected in series and form a LED string.”)); (Intro. to Flat Panel Displays, Dkt. No. 100-3 at 169 (“[A] string of LEDs are series connected.”)); (Baker Decl., Dkt. No. 97-1 ¶ 97 (“It was well known at the time of the alleged invention that a ‘string’ of LEDs means a set of LEDs connected in series.”)). Given the lack of contrary evidence from Polaris, the Court construes “a plurality of strings of light emitting diodes (LEDs)” as “a plurality of sets of light emitting diodes (LEDs) connected in series.”

I. “connection” (’456 Patent, Claims 1, 9)

Polaris’s Construction	Samsung’s Construction
Plain and ordinary meaning	Physical medium

The method of Claim 1 includes three “determining” steps, each of which relates to a “connection” between two devices:

determining a change temperature at a first device wherein said temperature is measured at a first port of the first device that is configured to receive *a connection to a second device*;

determining a change temperature at a second device wherein said temperature is measured at a second port of the second device that is configured to receive *the connection to the first device*; [and]

determining the greater of the changes in temperature measured at the first device and the second device, wherein said determining is performed while the first device provides current to the second device over *the connection*;

'456 Patent at 10:21–37 (emphasis added). The parties dispute whether the “connection” must be a physical connection (as Samsung urges), such as a cable or wire, or whether the “connection” can be something broader, like a wireless connection.

For support that the connection must be “physical,” Samsung first points to the claim’s recitation of a “port.” “If the ‘connection’ were wireless (e.g., over the air), then the ‘connector’ would not have anything to connect the ‘port’ to, making the claims nonsensical and therefore invalid.” (Dkt. No. 97 at 25). Samsung also cites Figures 1A, 1B, and 2A, and the related text, which refers to a “physical medium.” (*Id.* at 26). It stresses its construction comports with the invention’s purpose of reducing the current provided between devices to prevent overheating. (*Id.* at 27).

Although Polaris acknowledges a “port” is physical, (Hr’g Tr., Dkt. No. 131 at 105:20–106:4 (agreeing that “ports” and “connectors” are physical)), it nonetheless asserts Samsung’s construction is too narrow for three reasons. First, the ’456 Patent explains that devices may be coupled wirelessly. (Dkt. No. 86 at 21 (citing ’456 Patent at 5:10–12, 9:33–36)). Second, Polaris’s expert opines that a skilled artisan would understand the cited portions of the patent as disclosing a wireless connection. (*Id.* (citing Ricketts Decl., Dkt. No. 86-16 ¶ 23)). Finally, Polaris cites a technical dictionary and industry paper to show a “connection” can include a wireless connection. (*Id.* at 21–22).

The Court agrees with Polaris. Polaris proffers evidence that the ordinary and customary meaning of “connection” includes many types of links between communication devices, including “wire, *radio*, fiber optic cable, or other medium.” (Dict. of Comput. & Internet Terms, Dkt. No. 86-12 at 119 (emphasis added)). This is consistent with the ’456 Patent’s explanation that devices may be coupled wirelessly. *See* ’456 Patent at 5:10–12 (explaining that, “while the various devices are shown as coupling via wires, the devices may be coupled wirelessly”). This is also consistent with the ’456 Patent’s distinction between a “physical connection” in the description and a “connection” in the claims.

“The patentee is free to choose a broad term and expect to obtain the full scope of its plain and ordinary meaning” *Thorner v. Sony Comput. Entm’t Am. LLC*, 669 F.3d 1362, 1367 (Fed. Cir. 2012). While Samsung’s arguments may make sense from a technical standpoint, they are not enough to alter the ordinary meaning of “connection.” Rather, as with some of the other disputed terms now before the Court, they are better suited for arguments against infringement than for Samsung’s construction. Accordingly, the Court will give this term a “plain and ordinary meaning” construction, which is broader than “physical medium.”

J. “said determining the change in temperature” (’456 Patent, Claims 2–7)

Polaris’s Construction	Samsung’s Construction
Plain and ordinary meaning	Indefinite

Samsung argues these claims are indefinite because a skilled artisan would not be reasonably certain whether the disputed phrase refers to Claim 1’s step of “determining a change [in] temperature at a first device” or its step of “determining a change [in] temperature at a second device.” (Dkt. No. 97 at 30). Polaris, however, argues that “‘said determining’ could apply to one or both depending on the context of the claim.” (Dkt. No. 86 at 23).

The Court agrees with Polaris. To start, the meaning of the disputed phrase in Claim 2 is clear from the context of the other claim language. That claim requires both “determining a change” steps of Claim 1 to be performed a plurality of times. Otherwise, Claim 2’s step of “determining the greater of the changes” makes no sense.

Further, the Court sees no reason why that same logic would not apply to Claims 3–7. Essentially, without all the language characterizing where the recited measurements are made, the two “determining a change [in] temperature” steps of Claim 1 reduce to “determining a change in temperature at a first device and at a second device.” Considered in that light, nothing about Claims 3–7 is confusing. Claim 3 and Claim 5, for example, reference the “first device,” for which the combination of “determining a change [in] temperature” steps provide antecedent basis. The other claims are not limited to a particular device.

While the form of these claims is unconventional, that does not make them indefinite. The Court holds “said determining the change in temperature” refers to the combination of the two “said determining a change [in] temperature” steps of Claim 1.

K. “the first connector of the connection” (’456 Patent, Claims 6–7)

Polaris’s Construction	Samsung’s Construction
Plain and ordinary meaning	Indefinite

Claims 6 and 7, which depend from Claim 1, each recite “determining a temperature near a . . . pin of the first connector of the connection.” ’456 Patent at 11:1–8. Samsung argues that, because Claim 1 does not provide antecedent basis for “the first connector,” a skilled artisan would not be reasonably certain to which end of the connection the claim refers. (Dkt. No. 97 at 32). “In particular,” says Samsung, a skilled artisan “would not have been reasonably certain whether the ‘first connector’ is referring to (1) a connector at one end of the connection for

connecting the connection to the claimed first device or (2) another connector at another end of the connection for connecting the connection to the claimed second device.” (*Id.* at 32–33 (citing Baker Decl., Dkt. No. 97-1 ¶ 108)).

There is, however, another option—that the “first connector” may be for either end of the connection. While one might be tempted to associate the “first connector” with the “first device” given the use of “first” in both terms, nothing in the claims or specification requires that. Rather, the “first connector” relates to the connection instead of one device or the other. Samsung acknowledges as much. *See* (Dkt. No. 97 at 31 (noting the specification “does not link the ‘first’ connector to the ‘first’ device; instead, it merely uses the term ‘first’ (as opposed to ‘second’) to distinguish elements that share the same name”)). Although the disputed phrase is broad, it is not indefinite for lack of antecedent basis, and the Court construes the phrase in each claim as “a first connector of the connection.”

L. “the greater of the change in temperature determined by the first logic and the change in temperature determined by the third logic” (’456 Patent, Claim 9)

Polaris’s Construction	Samsung’s Construction
Plain and ordinary meaning	Indefinite

Claim 9 of the ’456 Patent recites:

9. A device, comprising:
 - a connection coupling a first device and a second device;
 - a first port of the first device, wherein the first port is configured to receive a first connector of the connection;
 - first logic of the first device coupled to the first port, wherein the first logic is configured to determine a temperature of the connection at the first connector;
 - second logic of the first device, wherein the second logic is

configured to provide current to the second device over the connection;

a second port of the second device, wherein the second port is configured to receive a second connector of the connection;

third logic of the second device coupled to the second port, wherein the third logic is configured to determine a temperature of the connection at the second connector;

wherein, in response to *the greater of the change in temperature determined by the first logic and the change in temperature determined by the third logic being above a threshold*, the second logic is configured to reduce the current being provided from the first device to the second device.

'456 Patent at 11:11–12:3 (emphasis added). Samsung argues that, because the disputed phrase does not refer back to an earlier recitation of determining the *change* in temperature, a skilled artisan “would not have been reasonably certain whether ‘the change in temperature determined by the [first/third] logic’ is referring to (1) the ‘temperature’ determined by the first/third logic or (2) a previously undefined ‘change in temperature’ that the first/third logic may be capable of determining, but is neither set out nor required by any specific claim language.” (Dkt. No. 97 at 34 (brackets in original)).

Nautilus only requires reasonable certainty by a skilled artisan. *See Nautilus*, 572 U.S. at 901 (“[A] patent is invalid for indefiniteness if its claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.”). Here, both the disclosure and the claim language show the language refers to the second of Samsung’s possibilities. The Abstract, for example, focuses on measuring “[a] change in temperature of a connection.” ’456 Patent at [57]. And the only disclosed methodology requires determining a change in temperature and

modifying the current based on that change. *See id.* fig.4 (steps 404, 406). Thus, there is no reason a skilled artisan might think the disputed phrase refers only to determining temperatures as opposed to *changes* in temperatures.

This is an apparatus claim reciting first, second, and third logic configured to take certain action. The “second logic” needs only to be configured to reduce the current in response to temperature changes detected by both the first and third logic. Nothing more is required of the second logic in the limitation, regardless of what the other claim limitations require. This term is not indefinite, and the Court will give it a “plain and ordinary meaning” construction.

V. CONCLUSION

Disputed Term	The Court's Construction
“a video driver receiving the video signal and generating a video drive signal indicative of the video signal and referenced to a positive power supply voltage of the AMOLED display panel” (’521 Patent, Claim 1)	“a video driver receiving the video signal and connected to a positive power supply voltage of the AMOLED display panel and generating a video drive signal indicative of the video signal based on the positive power supply voltage”
“AMOLED display panel” (’521 Patent, Claim 1)	“an electronic screen on which information can be displayed, the pixel elements of the screen having corresponding pixel circuits that are programmed with a stored voltage via a series of row and column decoders and switches”
“video signal” (’521 Patent, Claims 1, 2, 3, 5, 7)	“signal representing video data”
“independent of the positive power supply voltage” (’521 Patent, Claim 1)	Plain and ordinary meaning
“[the sum of or] the difference between the positive power supply voltage and the video [drive] signal” (’521 Patent, Claim 2)	Plain and ordinary meaning
“current mode isolator circuit” (’521 Patent, Claim 5)	“a circuit that converts current to the voltage signal $v(t)$, which is referenced to the power supply voltage VDD through a resistive load”
The “luminosity” terms: “adjusting the luminosity levels of the plurality of strings of LEDs for a plurality of times within the predetermined period of time” (’887 Patent, Claim 1)	Plain and ordinary meaning

Disputed Term	The Court's Construction
“a plurality of strings of light emitting diodes (LEDs)” (’887 Patent, Claims 1, 13)	“a plurality of sets of light emitting diodes (LEDs) connected in series”
“connection” (’456 Patent, Claims 1, 9)	Plain and ordinary meaning
“said determining the change in temperature” (’456 Patent, Claims 2–7)	refers to the combination of the two “said determining a change [in] temperature” steps of Claim 1
“the first connector of the connection” (’456 Patent, Claims 6–7)	“a first connector of the connection”
“the greater of the change in temperature determined by the first logic and the change in temperature determined by the third logic” (’456 Patent, Claim 9)	Plain and ordinary meaning

The Court **ORDERS** each party not to refer, directly or indirectly, to its own or any other party’s claim-construction positions in the presence of the jury. Likewise, the Court **ORDERS** the parties to refrain from mentioning any part of this opinion, other than the actual positions adopted by the Court, in the presence of the jury. Neither party may take a position before the jury that contradicts the Court’s reasoning in this opinion. Any reference to claim construction proceedings is limited to informing the jury of the positions adopted by the Court.

So ORDERED and SIGNED this 14th day of June, 2024.


 RODNEY GILSTRAP
 UNITED STATES DISTRICT JUDGE